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ABSTRACT

Cable television illustrates the problems that can arise in exploiting a promising new technology to meet social needs. Cable operators' marketing procedures have emphasized improvement of the quality of reception from local broadcasting stations, increased programming choice by introduction of distant signals, and introduction of special pay channels for movies and sports. Programming and operating costs are so high that mass appeal broadcasting is economically more attractive than cable. Using cable as a polling device, or burglar alarm, or for meter reading, are other applications which are accompanied by a variety of problems, the greatest of which is cost. The extent to which new socially significant services develop on cable in the future will depend on a number of factors including federal regulatory policy, interconnection of cable systems, social experimentation, and technological developments. (JEG)

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THE SOCIAL EFFECTS OF CABLE TELEVISION

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March 1975

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INTRODUCTION

Today's television broadcasting system, severely limited by radio spectrum constraints on the number of channels available at any one geographical location, has grown largely on the basis of mass entertainment programming. But cable television, with its many channels and the possibility of two-way transmission, has promised to provide a "television of abundance" with potentially dramatic social impact.[1]

Many new cable television services have been discussed: locally originated news and public affairs aimed at small audiences unserved by today's mass entertainment television medium; direct polling of viewers for their instantaneous responses about important issues; instructional programs for external degree, vocational, and other course work; information storage and retrieval for institutions such as hospitals and government facilities; and commercially oriented applications such as utility meter reading and burglar alarm systems.[2]

The use of cable today, however, stands in stark contrast to this potential. Its service consists almost entirely of rebroadcasting local television broadcast signals, plus carrying signals from several distant broadcasting stations and, more recently, offering special pay television channels for movies and sports. Although numerous cable systems do cover local public affairs (mostly talk shows), local sports events such as high school football, and other activities of community interest, it is fair to say that the overall social impact of cable has been nil. We are indeed witnessing a television of abundance, but the abundance is almost entirely composed of more of the same: more

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movies, more sports, and more of other mass entertainment. Cable remains almost entirely dependent on the broadcasting industry for programs; consequently, what it has to offer is essentially a mirror image, but with more mirrors, of what television stations already provide.

Here we shall explore briefly why this situation exists, and what the future may hold. Cable is an instructive case illustrating the problems that can arise in exploiting a promising new technology to meet social needs.

THE DEMAND FOR SOCIAL SERVICES

Television has profound effect on public opinion, one's view of the world, and one's place in it. That the home television set is lit on the average of six hours a day is an awesome fact. But this does not mean that merely easing the constraint on channel capacity will permit cable to easily satisfy additional social needs noted above. In assessing the potential of television for new services, whether by cable or other means, one must carefully examine public needs *without confusing* these needs with the fact that television *as a medium* is a powerful force in American society.

Consider, for example, news and public affairs aimed at small audiences that today are not well served by conventional broadcasting. In exploring the possibilities for cable applications, one must consider the alternative ways that these needs can be, or are being, met. The fact that these particular groups are not being served by today's television is not a sufficient basis to conclude that they are not being well served. Suburban newspapers, which have enjoyed substantial growth in recent years, provide a news and public affairs outlet to small communities. Journals and papers concentrate on the interests of other groups with a wide variety of professional, avocational, cultural, and ethnic interests. Local meetings cover many different activities--including church, government, and school--to satisfy yet other needs.

Moreover, one must take into account the inherent characteristics of alternative media. Television has the advantage of *moving* pictures

that provide the viewer with a tremendous information flow--facial expression, dynamic moving sequences, audiovisual displays, and other elements that make the medium particularly attractive for certain applications. But for many purposes, much of this information flow is irrelevant. Or to put it another way, one must watch television on a fixed schedule to glean whatever information is relevant. Although lacking the moving visual content, newspapers and other print media do permit the reader to skim at his convenience large quantities of information, to pick out only those parts that are relevant and to store information for later reuse--and to do this cheaply.

For these reasons, services aimed at small audiences have not developed into a major selling point for cable television. Virtually the whole thrust of cable operators' marketing activities has been in improving the quality of reception from local broadcasting stations; increasing programming choice by bringing in distant signals; and introducing special pay channels for movies and sports.

THE COST OF SERVICE

When examining the potential of a new service on cable, one must take into account costs as well as needs. Television production is generally expensive. In most cases, a large audience is required to reduce the cost per viewer to an economically low level. With new equipment coming onto the market, including 1/2-inch videotape machines, it is possible to produce programs much less expensively than is the case with conventional broadcast studio technology and techniques. But the quality and content of these productions is such that they typically appeal to very small audiences. Even though production costs are low, the cost per viewer may remain relatively high.

As a case in point, on some cable systems low cost equipment and production techniques are being used by outside groups on "public access" cable channels.[3] Although we have a good idea of the content of this programming, how much it costs, and who produces it, we know very little about who actually watches. Certainly any conventional audience rating system is too crude for measuring such very small groups; it is usually

only through a few phone calls or letters that cable operators know that anyone is watching. As a consequence, cable operators have not been able to depend on this kind of service to attract new subscribers.

In any attempt to spread programming costs across a large enough audience, cable suffers the handicap of covering relatively few homes. About 250 cable systems have more than 10,000 subscribers; the largest, in San Diego, has 75,000 subscribers. The remaining 3,000 systems each have fewer than 10,000 subscribers. These figures are minuscule in comparison with the number of homes reached by a conventional broadcasting station in a major metropolitan area. For example, in Houston one independent UHF station has a daily circulation of about 242,000 households; that is, over 200,000 homes tune into the station at least once during the day.[4] Daily circulation figures are even larger for independent VHF stations and for network affiliated stations.

Even with such large daily circulation figures, new stations coming onto the air, generally independent UHF stations, typically concentrate on mass entertainment fare, frequently consisting of even older movies than those shown on the other stations. For the cost of programming and of operating the station is so high that mass appeal broadcasting continues to be the most economically attractive alternative. And even with mass appeal programming, most independent UHF stations are suffering financial losses.

OTHER SERVICES

A variety of problems accompany the development of other services on cable.

Using cable as a polling device to the home viewer requires a relatively expensive subscriber terminal costing several hundred dollars at this stage of development. Also, the need for this kind of cable service must be assessed in light of the fact that polling can also be done by telephone and by mail--although with some additional time delay. Recent experiments have shown that televoting, using conventional telephone service, can be quite effective in eliciting views about a variety of social issues.[5]

Although it is technically feasible to provide burglar alarm service as another two-way application of cable, the cost of so doing

must be compared with using conventional telephone lines (since in any event a broadband capability is not required). Also we have the problem of false alarms--a problem that has been so severe in some cities that police departments will not respond to passive alarms without verification.

Meter reading faces the high cost of installing special equipment in the home. Moreover, it would be limited only to those homes subscribing to cable service scattered around the metropolitan area, forcing utility companies to continue conventional meter reading throughout the remainder of the area.

Educational applications are among the most promising for cable. But much depends on increasing the coverage of cable systems to gain access to students desiring course work at home. Also, arrangements must be made with educational institutions, including accreditation, control of course content, and supplementary student support.

A few educational institutions, however, have made good use of cable in reaching students both on campus and off campus. The large capacity of cable permits flexibility of course scheduling and content that would be out of the question with broadcast television.[6]

In all of these cases, questions remain about the cost of delivering the same kinds of services, whether by telephone, mail or personal travel, by alternative means. Again the importance of the distinction between technical feasibility and economic attractiveness cannot be overemphasized.

THE FUTURE

The extent to which new socially significant services develop on cable in the longer term will depend on a number of factors, four of which we shall discuss here: federal regulatory policy; interconnection of cable systems; social experimentation; and technological developments.

Federal Regulatory Policy

Cable television has not been growing in areas that have good over-the-air broadcasting service as rapidly as many had predicted a few years ago, partly as a consequence of restrictive federal regulatory policy. Concerned about the potential adverse impact of cable on television broadcasting stations, the Federal Communications Commission has established rules that severely constrain cable systems in carrying signals of distant broadcasting stations and in selecting programs for their special pay channels.

According to present rules, in cases where no independent broadcasting stations are located in its local market, a cable system may import three distant signals if it operates in the largest 50 markets in the country; two distant signals if it operates in the next 50 largest markets; and one distant signal if it operates in markets below the largest 100. In markets containing one or more independent broadcasting stations, a cable system is permitted a maximum of only two distant signals in the largest 50 markets; one distant signal in markets 51 to 100; and one in markets below 100. The range of choice among particular distant stations that may be carried by cable operators is further limited by "leapfrogging" restrictions that prohibit skipping over nearby stations in order to carry signals of more distant stations. Moreover, exclusivity rules restrict the choice of program material that may be shown in competition with local station programs. These rules depend on the nature of agreements between local station operators and copyright owners about the degree of exclusive use assured to the local station with respect to the programs it purchases.[7]

With respect to special pay channels, the FCC is concerned about the potential siphoning of programs from commercial television to pay television, in which case the television viewer would end up paying for what he now receives without direct charge. In order to prevent siphoning, the FCC specifies that (1) movies on pay television must be no more than two years old (except in the case of movies more than ten years old, one per month may also be shown on pay television); (2) no programs of a series with a continuing plot or cast of characters

may be shown on pay television; and (3) no sporting events regularly shown on commercial television may be shown on pay television. These rules are designed to prevent programming of the sort that is now shown on commercial television--the typical run of movies several years old and series such as situational comedies.

In light of these rules and other considerations, one recent study forecasts that cable penetration may increase from today's 13 percent (8.5 million homes) to 29 percent (25 million homes) by 1985.[8] While the percentage increase is substantial, it is computed on a small base. Even higher levels of penetration would probably be necessary to make many of the services mentioned above economic.

In reaction to widespread concern that its rules are unduly restrictive, the FCC is considering liberalization regarding pay television to permit a somewhat larger selection of programming for pay channels. It may also eventually reconsider its rules regarding the importation of distant signals. The problem of copyright arrangements, however, remains. In the case of signals picked up from broadcasting stations and retransmitted, cable operators do not pay copyright fees (unlike the case of materials originated by the cable operator where full copyright payment is made). Dispute has raged for years, in and out of the courts, about the rights and liabilities of cable operators with respect to copyright. Congress has also deliberated on this matter, but it has not yet passed legislation resolving the copyright issue. Until this is done, the FCC will not likely reconsider its rules regarding the carriage of distant signals.

Clearly, a relaxation of rules in the longer run would strengthen the overall market for cable. But it is impossible to predict with confidence the extent to which cable growth would be affected by any specified change in FCC rules.

Interconnection of Cable Systems

Although the proportion of total homes served by cable may remain low relative to coverage from conventional broadcasting stations, much could be accomplished by interconnecting the numerous cable systems scattered about each metropolitan area to form networks that increase

coverage from central program sources. Multichannel terrestrial microwave links have been developed especially for interconnecting adjacent cable systems. Another possibility lies in interconnecting distantly located cable systems by satellite or by terrestrial microwave to form regional and national networks.[9]

Cable operators will have an incentive to interconnect only if programs are available that make effective use of this broader viewer coverage; yet this programming will likely be forthcoming only as interconnected systems develop. As long as cable operators rely on retransmission of local and distant signals, they have little reason to interconnect. They can pick up signals from broadcasting stations either by their own master antennas or through microwave links carrying signals directly from distant stations. The problem of disincentives is increased because in many cases adjacent cable systems are owned by separate entities; networking arrangements would require agreements among them about cost sharing, and technical characteristics of the interconnection links--arrangements that are not impossible to attain, but ones unlikely to emerge unless a good case can be made for use of interconnection to increase the net profits of participating systems.

Social Experimentation

Some applications that have the greatest potential social significance, in the fields of health, education, and welfare, are unlikely to be explored vigorously by the private sector because many of the benefits do not accrue in profits to private firms, but rather accrue to society in areas where public agencies play a dominant role in providing service.

A study completed in 1971 for the Office of Telecommunications Policy outlined a number of experiments with commercially oriented applications and identified a number of specific cable systems that would be attractive for these applications.[10] At this writing the National Science Foundation is planning to fund a set of experiments, over a period of two or more years, involving the delivery of social services on two-way cable.

Such experiments require careful planning, design, and operation in order that the net effect of using cable television can be identified and measured. For example, one of the most promising possibilities for using two-way cable is home-based instruction for high school equivalency in parts of the country where educational achievement is low. With digital feedback from the viewer's home terminal, it would be possible to design interactive programming where responses from the students at home to the instructor in the central studio could provide a basis for the instructor's changing the course content on the spot, or scheduling on an ad hoc basis additional televised presentations for those students having particular difficulty--a degree of flexibility impossible with today's conventional broadcast television.

Testing the merits of this approach would require an experimental design directed to answering such questions as:

- To what extent is immediate feedback from students of educational value, as compared with use of the telephone and mail?
- To what extent does it contribute to student interaction and socialization not possible in conventional one-way television?
- How do costs and student achievement compare among two-way service, one-way television, and conventional classroom instruction?
- To what extent does the convenience and privacy of taking course work at home attract additional students?

By answering such questions for this and other applications, local, state, and federal agencies would be in a much better position to make wise decisions in working with cable operators and with the many other participants to replicate and expand experimental activities that show successful outcomes.

Technological Developments

Of course, much depends on the nature of technological advances, which can both enhance and reduce cable's prospects for having a major social impact. On one side, reduction in the cost of two-way service will clearly enhance cable's potential. Today, subscriber response terminals cost several hundred dollars; and two-way amplifiers and other equipment can increase cable distribution costs by 15 to 30 percent, depending on capacity and system configuration.[11] In addition, the problem of rf interference on return channels has arisen in previous two-way experiments. Recent technological advances incorporated on a trial basis in a cable system in Columbus, Ohio, may represent a significant breakthrough in reducing costs and enhancing quality of service.[12] Lower-noise cable amplifiers and better cable design and manufacture can further reduce costs and improve signal quality--particularly for systems requiring large numbers of amplifiers in cascade.

Advanced satellites, perhaps along the lines of the ATS-6 currently being demonstrated in educational services to the Rocky Mountain states, would reduce interconnection costs for regional and national networks. However, we must note two caveats:

- In assessing networking and the role of technological advance, it is important to remember that cost of programming, not the cost of the physical networking, frequently dominates.
- Satellites will continue to face strong competition from terrestrial microwave as technological advances occur also in the latter, and perhaps more important, as additional competition between specialized common carriers and established telephone companies brings about reductions in rates to users.

On the other side, continued development of videocassette and disk technologies over the longer term may provide some of the services that have been envisioned in the domain of cable television. To this point in time, videocassette and disk technology has been either too unreliable in service or too high in cost (or both) to provide an

attractive home market for prepackaged television materials. Rapid progress is being made, however, both within and outside the United States. By the 1980s not only will we likely see substantial institutional use of these technologies, but they may also start invading the home market. They would not replace two-way interactive uses of cable on television programming, or where timeliness is an important dimension (such as news and sports), but they could substitute for some of the entertainment and educational functions (movies, "how to" instruction, cultural and other special interest programming) that have been frequently discussed with regard to cable television. As in the case of cable, the cost of programming and arriving at satisfactory copyright arrangements will be important in determining the outcome.

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